Growing WILD

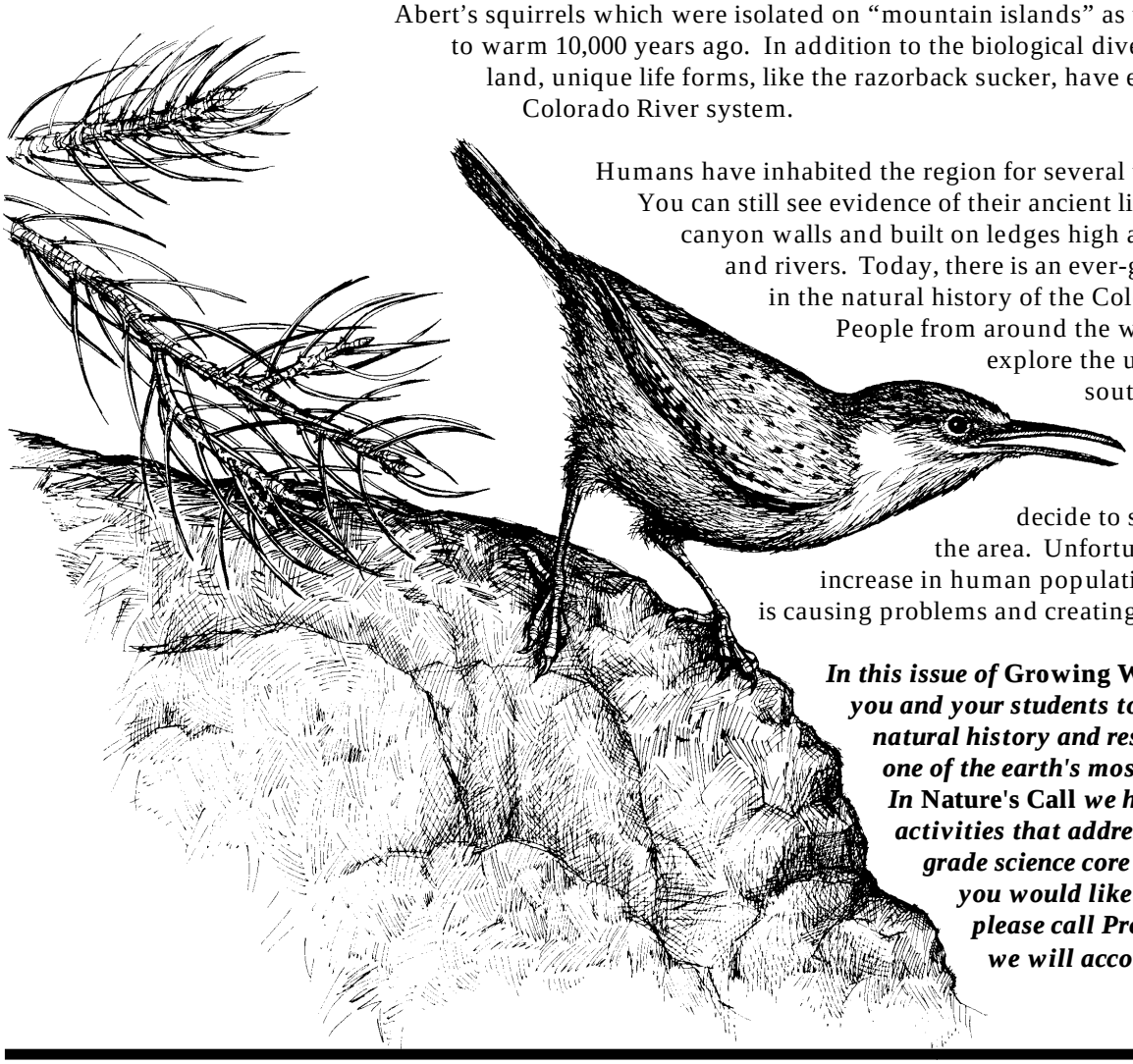
Winter 1995 *Utah's Project WILD Newsletter*

A Call from the Colorado Plateau

Nowhere on earth is there a place like the Colorado Plateau. Hot in the summer, cold in the winter, dry year round, this mile-high plateau shoulders snow-capped mountains that rise a mile above stark beauty. And silt-laden rivers entrenched in red and yellow sandstone relentlessly carve serpentine courses that carry water to the distant Pacific Ocean.

From deep canyons in red rock, a canyon wren's song rises on the wind.

In Utah, variation in elevation on the Colorado Plateau, 12,700 ft.- 2,400 ft., creates a great variety of ecosystems ranging from Mojave desert to alpine meadows. Each ecosystem is home to unique biological communities which support some fascinating creatures. The Coral Pink Sand Dunes in Kane County support a population of tiger beetles which are found in no other place on earth. In the ponderosa pine forests you can find Abert's squirrels which were isolated on "mountain islands" as the climate began to warm 10,000 years ago. In addition to the biological diversity found on land, unique life forms, like the razorback sucker, have evolved in the Colorado River system.



Humans have inhabited the region for several thousand years. You can still see evidence of their ancient life etched on canyon walls and built on ledges high above streams and rivers. Today, there is an ever-growing interest in the natural history of the Colorado Plateau. People from around the world come to explore the unique beauty of southeastern Utah. As this visitation increases more people who visit decide to stay and live in the area. Unfortunately, this increase in human population and visitation is causing problems and creating conflict.

In this issue of* Growing WILD*, we invite you and your students to investigate the natural history and resource issues of one of the earth's most unique regions. In* Nature's Call *we have developed activities that address the fourth grade science core curriculum. If you would like a classroom set please call Project WILD and we will accommodate you.

Ecosystems of the Colorado Plateau...

The Colorado Plateau in southeastern Utah can be divided into 18 different ecosystems. The largest are described below. The adjoining page contains a map diagramming these ecosystems, their relative sizes and relationships to each other. This map might be useful in creating activities that promote a greater understanding of Utah's ecosystems.

Alpine ecosystems exist only above timberline, which usually begins around 10,000 feet. Dominating vegetation includes grasses, forbs, lichens and mosses. In areas with enough moisture, dwarfed willows or other stunted woody plants may occur.

Spruce-fir ecosystems occur in the mountains of Utah. Engelmann spruce and alpine fir are the most common species of this ecosystem. Understory vegetation in this ecosystem is generally poorly developed due to shading. Conifers that grow near timberline are often dwarfed.

Aspen ecosystems are dominated by quaking aspens and occur in Utah's mountains. Aspen ecosystems often lie between coniferous ecosystems and ponderosa or mountain brush ecosystems. A dense understory of grasses, forbs and shrubs is generally present in aspen areas.

Ponderosa ecosystems are dominated by the ponderosa pine and occur only in the mountains. The ponderosa pine is intolerant of shade. It occurs on north as well as sunny south-facing slopes. Old growth stands create the classical open forest setting.

Sagebrush-grass ecosystems are dominated by sagebrush and grass species. Forbs can be abundant. This ecosystem can support a scattering of other shrubs and trees. Sagebrush-grass communities can be found within other ecosystems.

Mountain brush ecosystems are often dominated by gambel oak or various species of maple. However, other shrub species may be dominant and are always present. Grasses and forbs comprise the understory.

Pinyon-juniper ecosystems are dominated by pinyon pine and juniper. Less disturbed areas lack understory species. Cryptobiotic crust organisms (mosses, lichens and algae) often colonize the soil between trees. This ecosystem covers about 10 million acres in Utah.

Saltbush-grass ecosystems are dominated by a variety of saltbushes usually in association with Indian ricegrass and broom snakeweed. Forbs are more or less abundant depending on range conditions. This occurs only in the cold deserts of Utah. 10.5 million acres of this ecosystem blanket Utah.

Blackbrush ecosystems are dominated by blackbrush and ephedra. They can be dominated by blackbrush in pure stands to the exclusion of other shrubs. Grasses, particularly Indian ricegrass and galleta grass, as well as, forbs are usually present.

Grassland ecosystems are present in all other ecosystems. Dominant grasses vary with elevation and range conditions. Forbs and shrubs may be present in limited quantities, but grasses dominate the area.

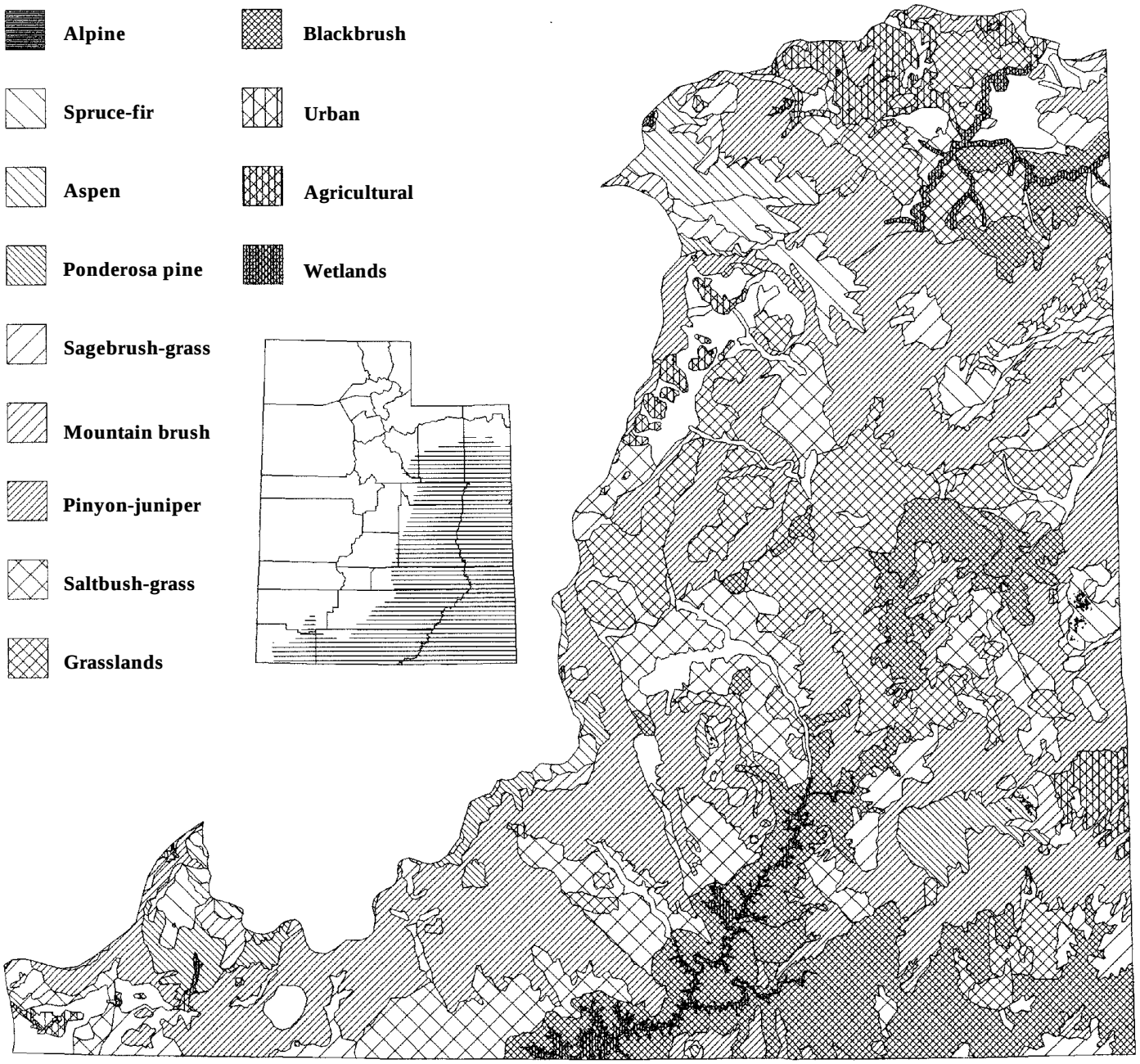
Urban ecosystems encompass lands developed for urban, suburban, industrial and transportation purposes. Typically, ornamental vegetation predominates and natural vegetation is generally excluded.

Agricultural ecosystems are characterized by cultivated croplands or pasture lands.

Wetland ecosystems are defined as permanently or seasonally-flooded areas, or non-flooded areas that provide moisture in excess of precipitation during the growing season. Southeastern Utah wetlands include: streams, lakes, marshes, some meadows and riparian areas. Many different plants are dependent on wetlands.

a view from above

This map was produced by the Division of Wildlife Resources Habitat Section using the Global Information System, a satellite-based mapping system. Notice the complexity of the Colorado Plateau. You can see the vast expanse of pinyon-juniper woodlands and blackbrush community. Look for the small alpine areas which represent the tops of the La Sal, Abajo and Henry mountains. Can you find the ponderosa pine forests on the flanks of the Abajo Mountains? A special thanks goes to Dave Mann for creating the map.



Common animals of the Colorado Plateau

The Colorado Plateau in Utah offers quite a diversity of wildlife. Listed below are some of the more common wild animals found there. The animals are listed by class. Each class of animals is followed by the number of different species in that class found on the Colorado Plateau. Also listed are the number of exotic or nonnative species which are denoted by an asterisk.

Insects and Spiders - unknown
pallid-winged grasshopper
Mormon cricket
tiger beetle
darkling beetle
harvester ant
termite
crab spider
Carolina wolf spider
painted lady (butterfly)
blue copper (butterfly)

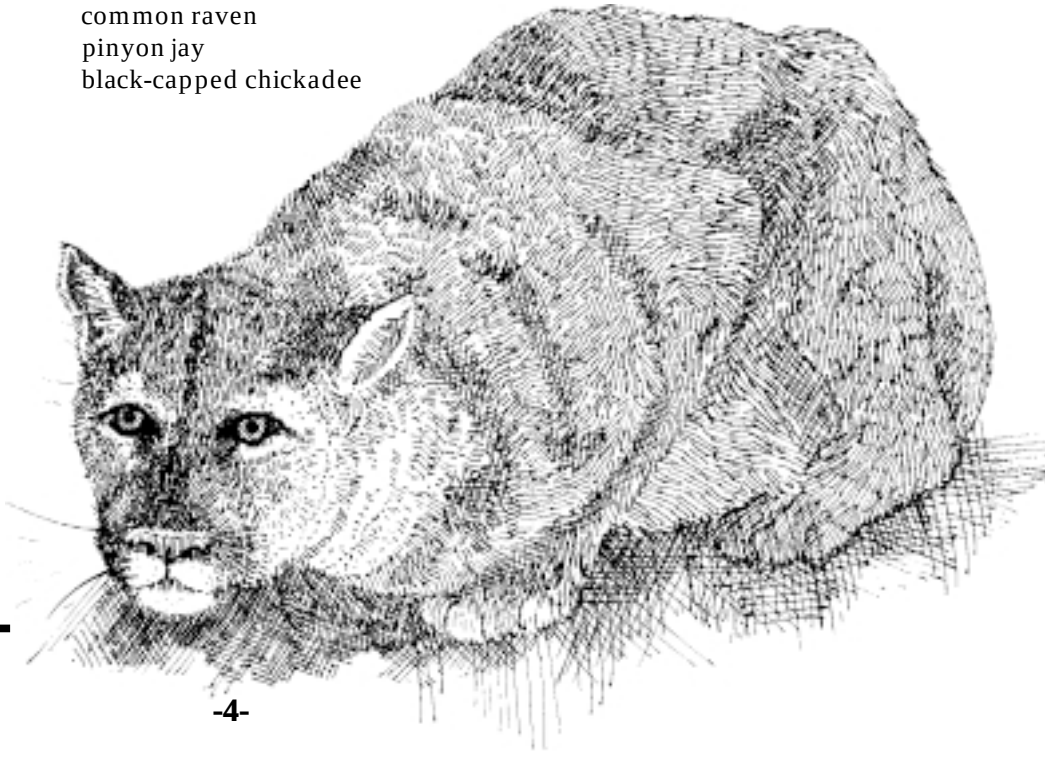
Fish - 42 species, 30 exotic
cutthroat trout
rainbow trout*
brown trout*
carp*
speckled dace
flannelmouth sucker
channel catfish*
mottled sculpin

Amphibians - 13 species, 1 exotic
tiger salamander
Great Plains toad
Great Basin spadefoot toad
red-spotted toad
Woodhouse's toad
northern leopard frog
canyon treefrog
striped chorus frog

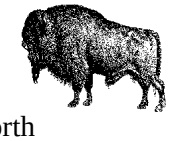
Reptiles - 36 species, 0 exotic
collared lizard
long-nosed leopard lizard
short-horned lizard
sagebrush lizard
eastern fence lizard
tree lizard
side-blotched lizard
western whiptail lizard
night snake
striped whipsnake
western terrestrial garter snake
western rattlesnake

Birds - 285 species, 7 exotic
cinnamon teal
turkey vulture
golden eagle
red-tailed hawk
northern harrier
American kestrel
blue grouse
killdeer
common snipe
Wilson's phalarope
canyon wren
mountain bluebird
American robin
yellow warbler
dark-eyed junco
rufous-sided towhee
red-winged blackbird
mourning dove
great horned owl
common night hawk
broad-tailed hummingbird
northern flicker
downy woodpecker
horned lark
cliff swallow
common raven
pinyon jay
black-capped chickadee

Mammals - 105 species, 1 exotic
montane shrew
little brown bat
coyote
gray fox
ringtail
long-tailed weasel
badger
mountain lion
bobcat
mule deer
bighorn sheep
white-tailed antelope squirrel
yellow-bellied marmot
rock squirrel
Uinta chipmunk
northern pocket gopher
Ord's kangaroo rat
beaver
desert woodrat
deer mouse
long-tailed vole
porcupine
black-tailed jack rabbit



Bison Balance - The Henry Mountain Herd



During the fifteenth century, the American buffalo *(Bison bison)* roamed over much of North America in countless numbers. Some biologists estimate the population was greater than fifty million animals. In 1871, one vast herd was estimated to contain four million animals. The herd stretched from Fort Zarah to Fort Larned along the Arkansas River. This herd was 50 miles deep and 25 miles wide, only one of numerous herds at the time. However by 1890, less than a thousand animals could be found on the entire continent!

The story of the destruction of these animals is well known. One historian of the time described the destruction as "perhaps one of the most remorseless and ceaseless slaughter of wild animals ever." One firm in St. Louis bought 250,000 buffalo skins in 1871. In Ft. Worth, 200,000 hides were sold at auction in only two days during 1872. A conservative estimate by writers of the time held that two to three bison rotted on the plains for each hide recovered.

Today scattered herds are in private and public ownership. Utah has two of these herds, one on Antelope Island and one on the Henry Mountains. In 1941, 15 cows and 3 bulls were captured in Yellowstone and released into the San Rafael Desert in southeastern Utah by the Utah Division of Wildlife Resources. The herd migrated to the Henry Mountains where it has grown to 384 animals. The herd on the Henry Mountains is the only free-roaming herd of bison in the lower 48 states that is managed by hunting alone.

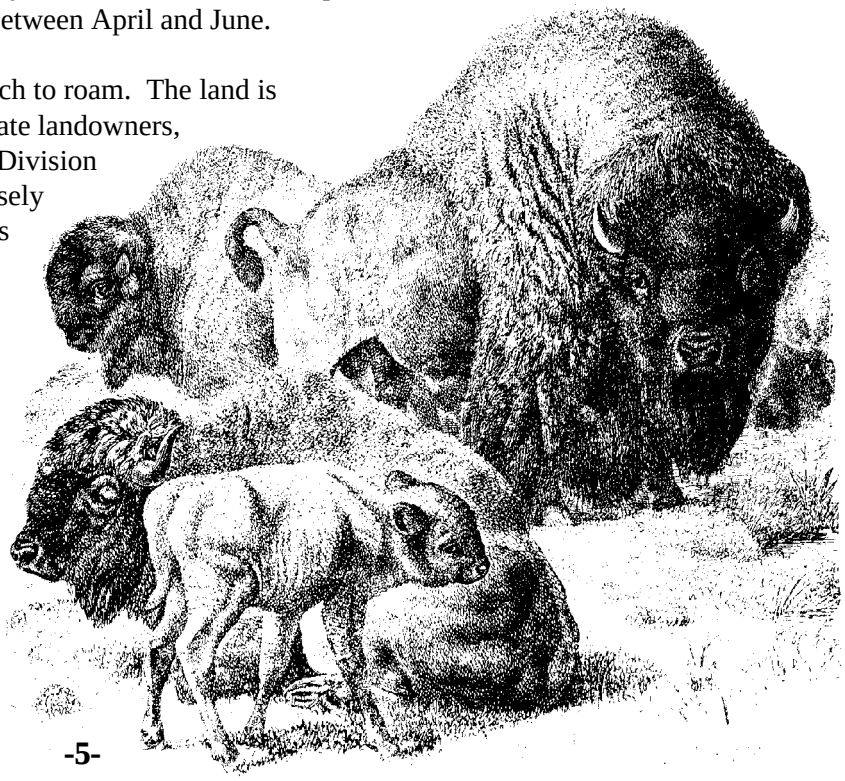
Bison are hardy animals; they can live up to 30 years and 28-year-old cows have been known to bear calves. They can survive on little water, are able to thrive on ranges where cattle perish and have been seen on bare ridge tops at 11,000 ft. pawing the snow for food when air temperatures were -40° F!

Bulls can weigh up to one ton, but usually both cows and bulls weigh between 800-1000 lbs. They can run 40 miles per hour, swim well and climb extremely steep slopes. They can be elusive and are usually very wary.

Animals herd up in July and August to breed. By fall, herds have broken up and animals run alone or in small groups. Calves are born between April and June.

The Henry's herd has 1600 square miles in which to roam. The land is managed in a cooperative venture between private landowners, the Bureau of Land Management and the Utah Division of Wildlife Resources. The Henry's herd is closely monitored for Brucellosis bacteria which causes spontaneous abortions in cattle. The herd has been certified as disease free since 1962.

If you are interested in receiving an adaptation of the Project WILD activity "Checks and Balances" which addresses the management of the Henry's bison herd, please write or call the Project WILD office. Included in the activity are management, condition and reproduction cards and data sheet.



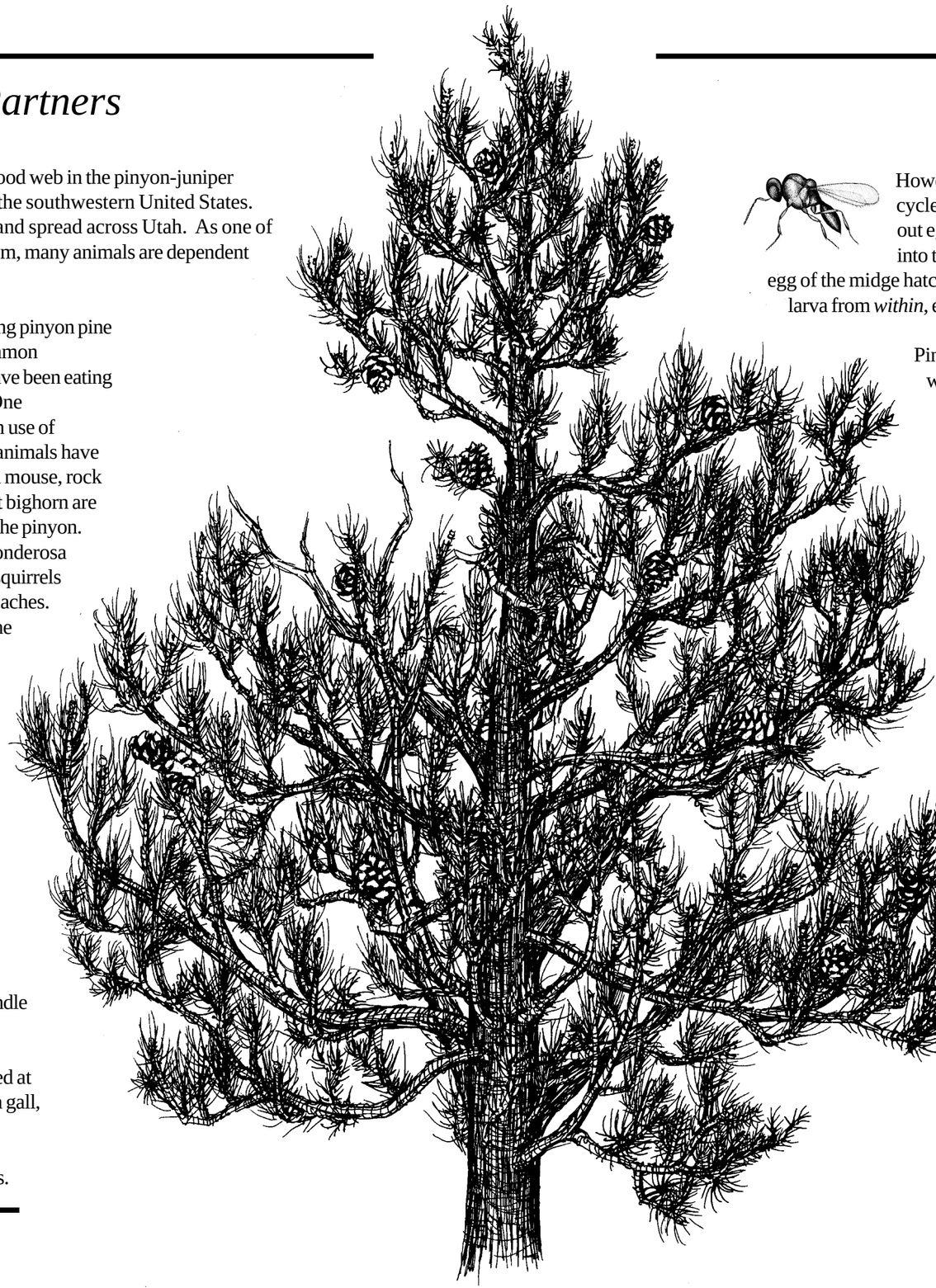
Pinyon Partners

The pinyon pine is at the heart of a vast, complex food web in the pinyon-juniper ecosystem which covers 75,000 square miles in the southwestern United States. Almost 9 million acres of this coniferous woodland spread across Utah. As one of the primary producers of food and shelter in this ecosystem, many animals are dependent on the pinyon pine.

Almost everyone has eaten the nutty tasting pinyon pine seeds commonly called pine nuts. A common ingredient in dishes like pesto, humans have been eating the tasty seeds for thousands of years. One archeological site in Nevada dates human use of pinyon pine seeds back 6,000 years. Like humans, wild animals have been eating pine nuts for thousands of years. The pinyon mouse, rock squirrel, Uinta chipmunk, woodrat, black bear and desert bighorn are some of the mammals that rely on the nutritious seeds of the pinyon. The seeds tempt Abert's squirrels to come down from ponderosa pine forests into the pinyon-juniper woodlands. Abert's squirrels gather the seeds which they in turn bury in underground caches. The cliff chipmunk collects pinyon seeds, but also raids the seed caches of other animals. Thus, the sun's energy is captured by the pinyon pine and is spread through the community.

Many insects' life cycles are tied to the pinyon tree. The mountain pine beetle burrows into the tree and feeds on the tree's phloem, (the food-conducting tissue), which causes the plant to ooze sticky pitch in defense. This pitch is used by a small black and yellow bee (*Dianthidium*) to build its hive, a small nest of pitch studded with pebbles and hidden under rocks. Where there are no pines, the bee is also absent.

Two other insects have a symbiotic relationship with the pine. The pinyon spindle gall midge, a small soft-bodied fly, lays its orange-colored eggs on the surface of the tree's needles. Tiny, orange larvae hatch and begin to feed at the needles' base. This feeding stimulates the growth of a gall, a small, hollow, spindle-shaped swelling where the larvae find food and shelter. Later, the midge larvae metamorphose into adults.



However, if the tiny wasp (*Platygaster*) finds the midge's eggs the life cycle of the midge takes a bizarre turn. The adult female wasp searches out eggs of the midge. When she finds an egg she inserts her ovipositor into the egg and lays her own egg within the egg of the midge. When the egg of the midge hatches, so does the wasp's. The wasp larva then consumes the midge larva from *within*, emerging when the midge larva is but a husk!

Pinyon trees provide many birds with food and shelter. Canyon wrens, black-throated gray warblers, blue-gray gnatcatchers and other insectivorous birds are often seen gleaning trees for insects. Several members of the Crow family—Clark's nutcracker, pinyon jay, scrub jay, and Stellar's jay—enjoy the insect bounty found in the pinyons, but their relationship to the tree goes deeper. These birds can be considered the "Johnny Appleseeds" of the pinyon-juniper ecosystem and represent a remarkable example of mutualism.

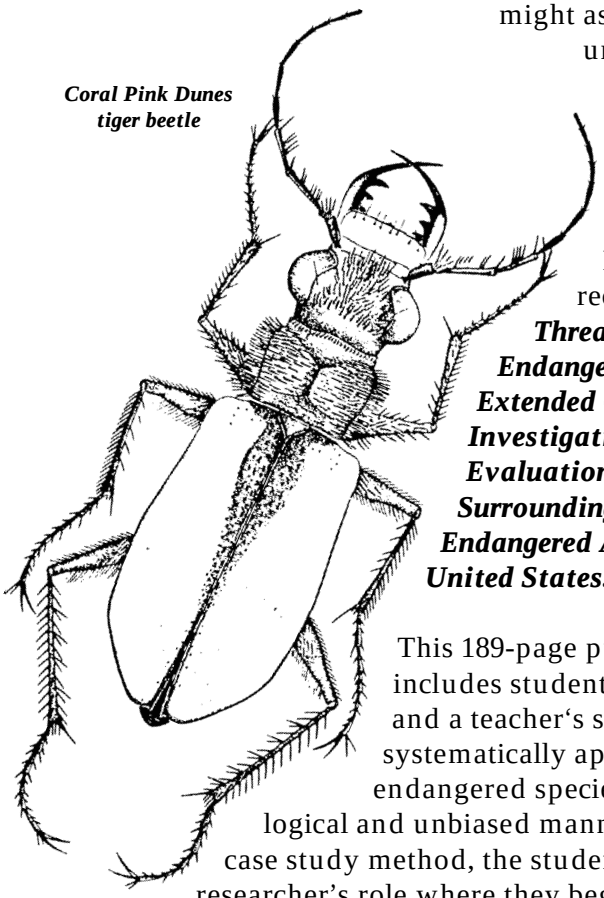
Without "help" the large, heavy, wingless seeds of the pinyon tree would fall to the base of the tree and fail to germinate. This is when the pinyon jay enters the scene as "Johnny Appleseed." The jay pulls the seeds out of the cones, flies away and caches them in the soil for use during the winter. Of course, not all of the seeds are recovered during the winter and those unrecovered seeds, under the proper conditions, germinate and grow. Interestingly, the pinyon jay gathers the largest, choicest seeds. Thus, this bird not only plants new stands of pinyon trees but selects the *type* of trees to be planted, those that produce large, rich seeds!

The ecology of the pinyon-juniper ecosystem is complex and fascinating. Since this ecosystem is so common in Utah, there are many opportunities to introduce your students to the ecology of this unique woodland.

Resource

Endangered Species: Issues and Actions

Students are curious about endangered species. Often they ask technical questions that are beyond a teacher's expertise, but educators are trained to handle such situations. However, there are some questions and situations that are more difficult to manage. How do you handle the situation when a student in your class has a parent who might lose their job as a result of the management of a threatened or endangered animal? Students might ask questions about the issue that places you and others in an uncomfortable position. Most teachers do not receive training on investigating issues or taking actions.



Coral Pink Dunes tiger beetle

For teachers in upper elementary and secondary classrooms, there is a guide to issue investigation and action skills. David Hagengruber and Harold Hungerford recently published, ***Threatened and Endangered Animals: An Extended Case Study for the Investigation and Evaluation of Issues Surrounding Threatened and Endangered Animals of the United States.***

This 189-page publication includes student text, activities and a teacher's supplement which systematically approaches the endangered species issue in a logical and unbiased manner. By using the case study method, the student is placed in a researcher's role where they begin to develop the skills needed to understand wildlife issues. The goal of the guide is to aid in the development of responsible citizens. This method of teaching places the responsibility for learning with the student and removes the teacher from some of the more difficult situations.

If you are interested in checking out the guides, please call Project WILD or you can purchase the guides for $20.80 from Stipes Publishing, PO Box 526, Champaign IL, 61824. Call (217) 356-8391.

Coral Pink Dunes tiger beetle
(Cicindela limbata albissima)

This small beetle has a bright green head and legs, dull bronze back and bright green underside tinged with blue. Tiger beetles are known for their predatory behavior. The adult pursues its prey, usually a small insect, by chasing after it. If not successful on the ground, it will take to the air and pounce upon its prey grasping the prey with its large sickle-shaped mandibles.

This tiger beetle is found almost solely in the Coral Pink Sand Dunes State Park in Kane County. In addition to being restricted to this one site, it is very localized with 80% of the adult population found within an area 800 meters long x 300 meters wide.

Threats to the population are mainly from off road vehicle (ORV) use and overcollection by hobbyists and professionals.

Recently, the U.S. Fish and Wildlife Service received a petition to list this insect as endangered under the Endangered Species Act. This action, if approved, might remove ORV use in a very small portion of the park and forbid collection.

Resource

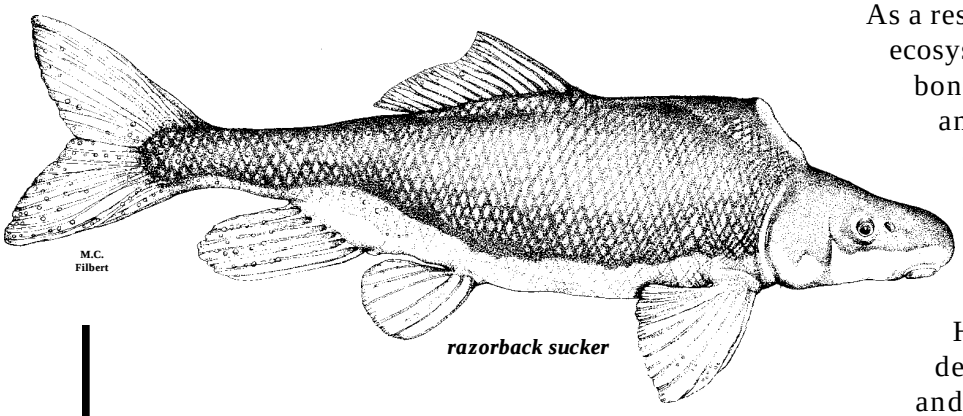
Rivers at Risk

The Colorado River system is an important feature of the Colorado Plateau. Entrenched in deep canyons, rivers continue the three million year history of carrying precious water across this vast, dry region. Beginning in the mountains of Colorado, the Colorado River travels 1,700 miles and drops two miles in elevation on its trip to the Gulf of California. The Green, San Juan, Dolores, Virgin and San Rafael are some of the other rivers in this system that have carved their way through the Colorado Plateau.

These rivers are unique, offering a variety of environments ranging from slow-moving meanders to crashing falls and rapids. The rivers are subject to dramatic rises that are a result of intense thunderstorms and the annual spring snow melt. In addition to large fluctuations in flow rates, the rivers offer a variety of temperatures and salinities, varying from drainage to drainage.

These important waterways provide food, water and shelter to terrestrial wild animals in a semi-desert climate. Animals like prairie falcons, deer and kit foxes rely on the water to avoid dehydration. Coyotes, ravens and eagles scavenge the banks for food. Migratory birds find shelter along the banks during their annual migrations.

Of all the animals that rely on these waters, few that have adapted to the conditions of the rivers as well as the razorback sucker, bonytail chub, Colorado squawfish and humpback chub. Their odd shapes and migratory behaviors have evolved in response to flash floods, heavy silt loads, high salinity and spring snow melt. However, these conditions have changed since damming the Colorado. Annual flooding is moderated by dams. The dams block migration and change rivers to reservoirs, limiting these fish to 25% of their historic range. In addition to this challenge, the fish face competition from 40 exotic species, such as channel catfish. Finally, there are 25 million people who rely upon the waters of the Colorado for irrigation, drinking water, livestock, power generation, recreation and mining.

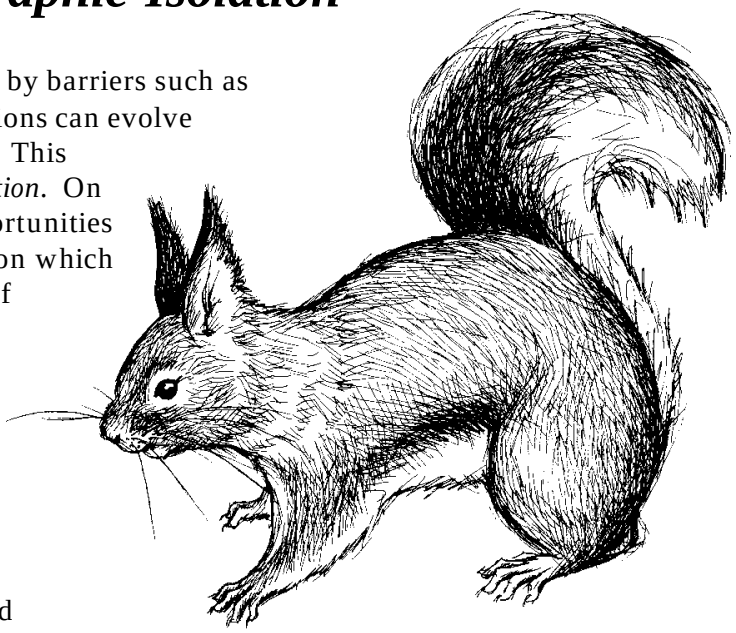


razorback sucker

As a result of humans changing the ecosystem, the razorback sucker, bonytail chub, Colorado squawfish, and humpback chub are now endangered. State and federal agencies, private individuals, corporations and conservation organizations are rallying to recover these endangered fish. Habitat management, habitat development, stocking programs and research are some of the methods used to halt the decline of these fish.

If you or your students are interested in investigating the endangered fish of the Colorado as a component of an issue investigation and action unit, please call Project WILD for a free copy of the activity guide, Rivers at Risk, *and check-out the accompanying video or slide tape presentation,* Swimming Upstream. *Appropriate for upper elementary and secondary students.*

Sky Islands and River Barriers: Biogeographic Isolation



Plant and animal populations isolated by barriers such as water, landforms and climatic conditions can evolve into different species and subspecies. This phenomenon is known as *biogeographic isolation*. On the Colorado Plateau, there are several opportunities to study the subject of biogeographic isolation which Charles Darwin made famous in his study of finches on the isolated Galapagos Islands.

Mountains like the La Sals, Abajos and Henrys which rise over a mile above the Colorado Plateau are much like islands in the ocean. Surrounded by semi-desert conditions, certain animals are restricted in their range to the moist "mountain islands." These islands provide a refuge for plants and animals which were isolated after the climate began to warm 10,000 years ago. Forests of ponderosa pine were more common in Utah during the last ice age but could not adapt to the warmer and drier climate. The mountains were the only places that continued to receive enough precipitation to support the pines. Several unique animals remained behind in the pines and were isolated from other populations by the vast dry lands below. Abert's squirrels are found in Utah only in the ponderosa pine forests of the Abajo Mountains. They form a distinctly different subspecies than the Abert's squirrel found on the Kaibab Plateau south of the Grand Canyon.

Rivers also play a role in isolating animal populations. Deep canyons scoured in the Colorado Plateau isolate animals and in some cases limit distribution. Canyon mice *(Peromyscus crinitus)* are an example of mammals which are evolving different characteristics as a result of being isolated by rivers. East of the Green River in Canyonlands National Park, canyon mice sport a bright patch of buff colored hairs on their chests. Those on the west side of the river, do not. The river has served as a barrier between the two populations. As a result, different characteristics are evolving.

Much remains to be learned about biogeographic isolation on the Colorado Plateau, but these examples might bring the concept closer to home.

Abert's Squirrel
(Sciurus aberti navajo)

The only large tree squirrel in the Intermountain West is limited in distribution to ponderosa pine ecosystems. In Utah, Abert's Squirrel can be found only on the Abajo Mountains and nearby Elk Ridge Plateau of southeastern Utah.

One of the squirrel's most distinctive physical characteristics is the long, broad ears that bear long tufts of hair giving the animal its common name, "tassel-eared squirrel." The *navajo* subspecies is described as a char-gray color with a large, bushy, gray tail and a distinctive cinnamon-red spot or stripe on the squirrel's back.

The squirrel's major food source is the inner bark of twigs, the buds, the pollen and the seeds of the ponderosa pine. Goshawks and great-horned owls are the squirrel's major predators.

The Abert's squirrel has long been cited as a classic example of evolutionary change through geographic isolation. This isolation and subsequent evolution may have been due to the disappearance of ponderosa pine forests from lower elevations with the termination of the Wisconsin Ice Age, 10,000 years ago.

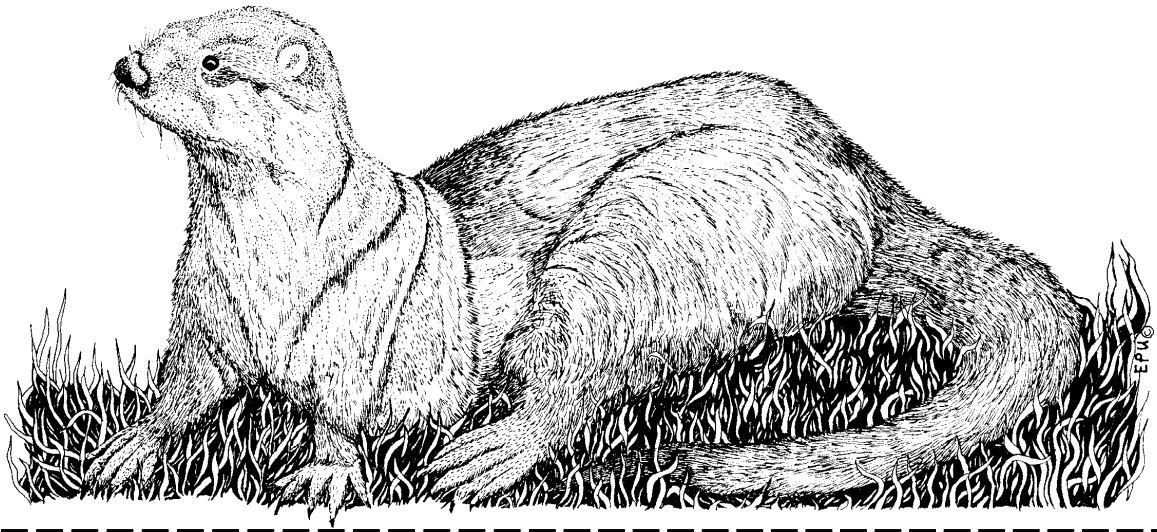
Advanced Wildlife Workshop

Colorado Plateau Natural History Float Trip

Answer the "call of the canyons" and join us for a float trip, June 12-16, 1995, on the Green River as it meanders through Labyrinth Canyon. We will embark on our five-day journey beginning at the John Wesley Powell Museum in the town of Green River. Joining our group will be aquatic and terrestrial biologists who will give daily instruction on the natural history of the Colorado Plateau. We will travel in rafts and canoes on a stretch of the Green River that has no rapids. Weather conditions can range from hot days to cool, rainy nights.

Due to the remoteness of the trip, we encourage people who have medical conditions or people who are uncomfortable living outdoors to attend a more appropriate workshop.

Total cost for the trip including food, boat rental and shuttle, will be $75. Elementary and secondary USU credit is available at an additional cost.



To register for the trip, please return the form below with a $20.00 check to reserve your spot. Make your check payable to the Utah Division of Wildlife Resources.

Name _____ Phone _____

Address _____

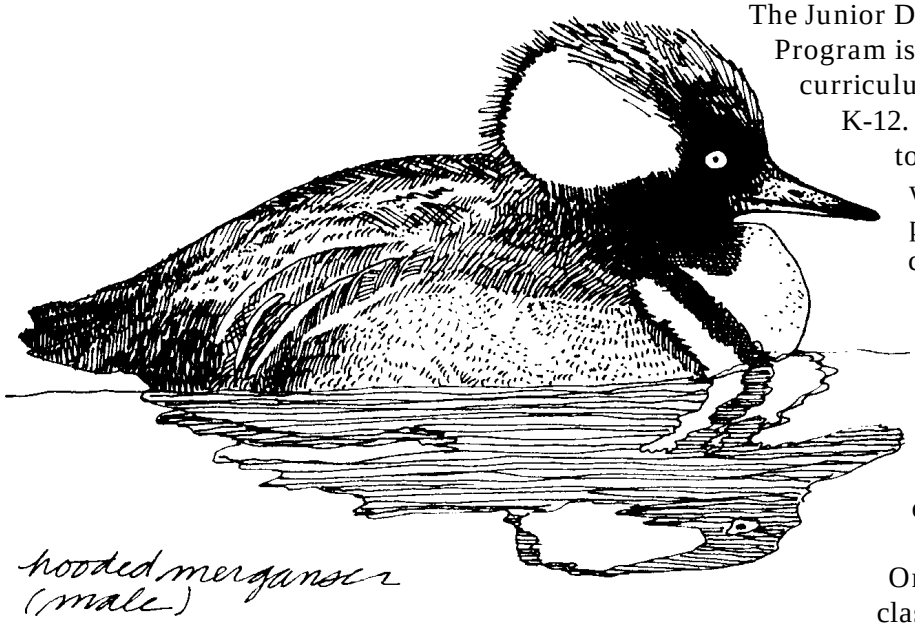
Grade level _____ School _____

_____ I would like a list of people who want to carpool.

_____ I need transportation from Salt Lake City.

Contest *Conservation Through the Arts*

This school year, tens of thousands of budding young artists will learn about wetlands and waterfowl while refining their artistic talents through participation in the Federal Junior Duck Stamp Program. This program expands on the Federal Duck Stamp Program, which is one of the most successful wildlife conservation programs in history. Since the Federal Duck Stamp Program's beginning, the sale of over 285 million dollars worth of duck stamps to waterfowl hunters and stamp collectors has helped preserve 3.5 million acres of wildlife habitat. Many of the 400 National Wildlife Refuges were purchased in part or entirely by duck stamp receipts.



The Junior Duck Stamp Conservation Program is a unique visual arts curriculum for students in grades K-12. This program is designed to incorporate scientific and wildlife management principles into a visual arts curriculum. This nontraditional pairing of subjects brings new interests to both the sciences and the arts and offers an opportunity to experience the beauty and diversity of wildlife.

One of the suggested classroom activities is creating Junior Duck Stamp designs. Teachers enter some of the designs into a statewide art contest, where they are judged. The participants' art is grouped into four categories: Grades K-3, 4-6, 7-9 and 10-12. Among other awards, judges choose the state's "Best of Show" winning design. Later, each state's "Best of Show" is entered into a national competition. National winners will be awarded scholarships, as well as, a three-day trip to Washington, D.C. They will be accompanied on this trip with their teacher and one of their parents and will be recognized at the 1995 Federal Duck Stamp Art Contest.

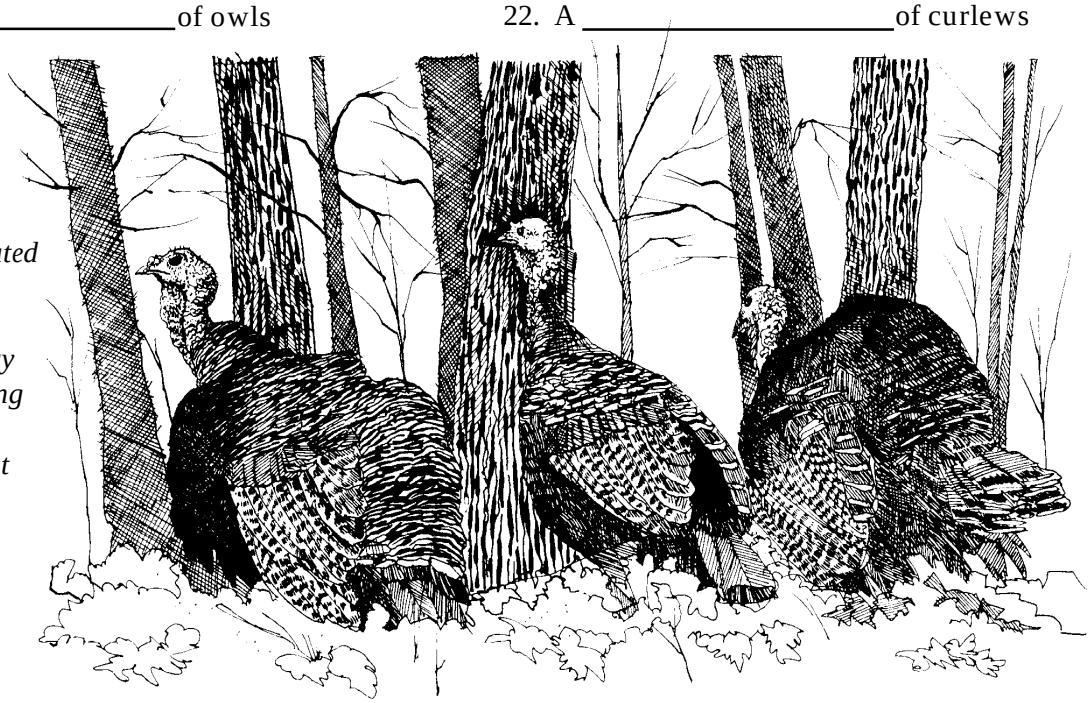
The Junior Duck Stamps are considered collectibles and are sold at post offices nationwide. The funds raised through the sale of the Junior Duck Stamps are dedicated to conservation education awards and scholarships to the participants.

This year the Utah Division of Wildlife Resources is sponsoring the Federal Junior Duck Stamp Program in Utah. For more information, contact Bob Ellis at 538-4720.

Most people know that a group of deer is called a herd. However you might not know the correct name for other animal groups. See if you can create names for the animal groups listed below. Don't worry about getting the names correct, be creative and have fun choosing names that you think work. Write the name in the blank before each animal. Then compare the name you created to the correct name listed at the bottom.

1. A shrewdness of apes
2. A _____ of lions
3. A _____ of crows
4. A _____ of turkeys
5. A _____ of moles
6. A _____ of herons
7. A _____ of foxes
8. A _____ of finches
9. A _____ of toads
10. A _____ of geese
11. A _____ of owls
12. A _____ of frogs
13. A _____ of turtles
14. A _____ of hawks
15. A _____ of gnats
16. A _____ of plovers
17. A _____ of eagles
18. A _____ of larks
19. A _____ of gulls
20. A _____ of swans
21. A _____ of trout
22. A _____ of curlews

Pick one of the animal group names. You can pick one you created or one of the answers below. Now write a story or poem describing how the animal group came to get its name.



2. pride 3. murder 4. rafter 5. labor 6. siege 7. skulk 8. charm 9. knot 10. skein 11. parliament 12. army 13. bale 14. kettle 15. cloud 16. congregation 17. convocation 18. exaltation 19. colony 20. wedge 21. hover 22. herd

WILD Index

Wetlands

The following facts and statistics were gathered from a variety of sources. If you want the source, please contact the Project WILD office.

• A U.S. Fish and Wildlife Service study of wetland loss found from the mid-1970s to the mid-1980s, 290,000 acres a year were lost. This is an improvement from the time period of 1950-1970 when wetlands were lost at a rate of 458,000 acres a year.

• Wetlands are important spawning and nursery areas for commercial and recreational fish and shellfish industries. Louisiana marshes produce an annual commercial fish and shellfish harvest of 1.2 billion pounds worth aroximately $244 million in 1991.

• Of the over 9 million acres of wetlands lost during the twenty-year period between 1954 and 1974 , agricultural development was responsible for 87% of the loss, with urban development and other development causing 8% and 5% respectively.

• Nationwide over 5,000 species of plants, 190 species of amphibians and 270 species of birds depend on wetlands for survival.

• When Hurricane Andrew came onshore in Florida and Louisiana in 1992, the nation was shown the difference that coastal wetlands make. Andrew hit both states with about the same strength, but Florida sustained over $20 billion in damage compared to $2.5 billion in Louisiana. The difference: Florida coastal development has removed wetlands and with it their protective effects.

• A 1965 study of the Charles River by the U.S. Corp of Engineers determined that if 40% of the Charles River wetlands were lost, flood stages in the middle and upper river would increase two to four feet, increasing annual losses by $800,000.

• Approximately 75% of the remaining wetlands in the lower 48 States are privately owned.

• Nearly 50% of the animals on the endangered species list in the U.S. rely onwetlands for their survival.

• The U.S. Fish and Wildlife Service estimates in 1985, 2.7 million waterfowl hunters spent nearly 24 million hunter days and $600 million during hunts.

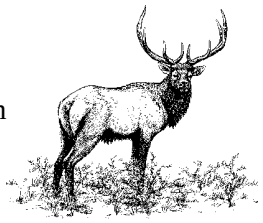
• Before the Wetlands Act in 1973, Delaware was losing almost 450 acres of tidal wetlands each year. After the law, losses dropped to just 20 acres annually.

• More than half of U.S. adults hunt, fish, birdwatch, or photograph wildlife. These activities, which rely on wetlands, added an estimated $59.5 billion to the nation's economy in 1991.

• Approximately 215 million acres of wetlands existed in the United States (lower 48) at the time of European colonization. In the mid-1970s only 106 million acres remained, leaving just 46% of the original wetland acreage.

Resources

For FREE copies of the resources described below, contact the Project WILD office, 1594 West North Temple, Ste. 2110, Salt Lake City, UT 84116 (801) 538-4719.



Wapiti - Enhance your students' understanding of this magnificent animal by getting a copy of our most recent **Wildlife Notebook Series** and a **poster** from the Rocky Mountain Elk Foundation depicting the importance of habitat. We also have a few copies of the activity guide ***WILD about ELK***.

Burrowing Owl - One of the most interesting owls in Utah comes to life in our **Wildlife Notebook Series**. Learn how this diurnal, colonial owl is dependent on burrowing mammals.

Birds of Two Worlds Poster - Both attractive and informative, this poster depicts 10 neotropical migratory bird species and contains information about their ranges, migratory routes and habitats.

Utah Wildflower Poster - Bring springtime into your classroom with this artistic poster depicting Utah wildflowers created by the Utah Native Plant Society and the Utah Natural Heritage Program.

Paper Recycling Poster - Where Does All Your Old Homework Go? - Your students will know the answer to this question and learn how to recycle their own paper with the help of this poster. Printed on 50% total recovered fiber, of course!

"Biodiversity works for wildlife. You can too!" - Bring your students to responsible action for wildlife with projects outlined in this **instructional guide**. A **full-color poster** is also included in this packet from the Canadian Wildlife Federation.

Beehive Good Buddies - We have revised our set of **"Good Buddies" cards** to include more Utah specific symbiotic relationships. Each card depicts two organisms with their relationship described on the back.

Secret World of Bats - Join narrator Stacy Keach as he follows Merlin Tuttle of Bat Conservation International around the world in search of these mysterious creatures of the night. Current information and excellent slow-motion photography combine to dispel many myths about these misunderstood animals. Length: 48:00. Grade Level: K-12

A World Alive - Excellent wildlife photography, upbeat music and the narration of James Earl Jones combine to give the viewer an exciting look into the wild world of animals. Length: 40:00 Grade Level: 5-12

Into the Wild - Join two students as they explore the efforts of biologists to save the whooping crane, red wolf and humpback whale from extinction. Length: 55:00 Grade Level: 2-6

Video Summary List - Request a list including a brief description of each video in our library with length and suggested grade level.

project WILD®

Utah Division of Wildlife Resources
1594 W. North Temple, Ste. 2110
Salt Lake City, Utah 84116

Growing WILD **is written by Bob Ellis and Al Schademan, edited by Heather Hales. The canyon wren, pinyon pine, Abert's squirrel, midge, jay, Nature's Call canyon scene and wasp drawings are by Jill Rensel. Special thanks to Sarah Twombly and Dave Mann.**

STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources

Bulk Rate
U.S.
POSTAGE
PAID
Permit No. 4621
Salt Lake City
Utah